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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,556	10/28/2005	Ali Erdemir	051583-0318	5762
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EXAMINER				
GOLOBOY, JAMES C				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/532,556

Applicant(s)

ERDEMIR ET AL.

Examiner

James Goloboy

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-46 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 24-46 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 4/22/05
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 24 objected to because of the following informality: The forming or machining fluid of claim 24 is "provided", but the boron compound is not dissolved in the fluid. The examiner recommends that "forming or machining fluid" in line 3 of the claim be replaced by "carrier fluid", or that "carrier" in line 5 of the claim be replaced by "forming or machining fluid". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 24 recites "a concentration of from about 2% to about 24%", but does not say whether the concentration is by weight or by volume. It is the examiner's position that applicant intends to claim a composition by weight, and the claims have been interpreted in that manner in the rejections set forth below.

4. Claims 37 and 41-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 37 recites a dry film that is "easily removed". Claim 41 recites "better surface finishes", with less oxidation and atomization than is "typically experienced". Claim 42 recites a machining fluid that is "by nature, stable and odor-free, generating

parts that require little or no post operation treatment or cleaning". The scope of the claims is unclear, since the application provides no definition or way of measuring what constitutes "easily removed", "better surface finishes", "stable and odor-free", or "little or no post operation treatment". Additionally, the amount of oxidation or atomization that is "typically experienced" will depend on the machining fluid.

5. Claims 25 and 32-33 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 25 and 32-33 recite "hot water" as a carrier. It is not clear what temperature of water qualifies as "hot water".

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 24-26, 28-29, 35, 40-42, 44, and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Duerksen (U.S. Pat. No. 4,448,701).

Duerksen, in column 1 lines 9-12 discloses a cutting fluid that is used for machining and is therefore considered a machining fluid. In column 2 lines 9-12

Art Unit: 1797

Duerksen discloses that the fluid comprises 35 to 65% by volume of a glycol, 35 to 65% by volume of water, and 5-12 grams of a boron compound per 100 mL of liquid. In column 2 lines 2-5 Duerksen discloses that the glycol can be propylene glycol or ethylene glycol. As ethylene glycol has a density of 1.113 g/mL, and propylene glycol has a density of 1.036 g/mL, the total mass of glycol per 100 mL of liquid can range from 36.26 to 72.35 g, while the mass of water ranges from 35 to 65 g. The total mass of 100 mL of liquid therefore ranges from 101.26 to 107.35 g, and the concentration of boron therefore ranges from 4.45% ($5/5+107.35$) to 10.60% ($12/12+101.26$), within the range recited in claim 24. As the composition of Duerksen must be formed by dissolving the boron compound in the fluid, Duerksen meets the limitations of claim 24.

Duerksen discloses that the carrier fluid is a mixture of water and polyhydric alcohol (glycol), meeting the limitations of claims 25, 35, and 46. In column 2 lines 4-6 and the reference's claim 1, Duerksen discloses that the boron compound can be boric acid, as recited in claims 26 and 28, or borax (sodium tetraborate decahydrate), as recited in claim 29. As the composition meets the compositional limitations of claims 24 and 35, it is also considered to possess the properties of claims 40-42 and 44. Column 2 lines 39-45 of Duerksen discuss the stability of the compound.

8. Claims 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown (U.S. Pat. No. 4,039,337).

In column 5 lines 44-54 (Example II), Brown discloses an aqueous dispersion comprising 21.9% by weight of boron nitride, within the range recited in claim 24. The

dispersion is formed by adding the boron nitride to the water. In column 5 lines 10-12 Brown discloses that the compositions are useful for metal forming. The method of forming the dispersion of Brown therefore meets the limitations of claim 24, and the use of water as the carrier meets the limitations of claim 25.

9. Claims 24-26, 28, and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Krueger (U.S. Pat. No. 5,512,191).

In the table in column 11, Krueger discloses several metalworking fluids (Examples 1-4 and 6) comprising water and boric acid, where the boric acid is present in an amount within the range recited in claim 24. The use of water as the carrier meets the limitations of claims 25 and 46. Boric acid meets the limitations of claims 26, 28, and 46.

10. Claims 24-26, 28, and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Hacias (U.S. Pat. No. 5,547,595).

In column 2 lines 18-29, Hacias discloses a lubricant for metal forming. In column 3 lines 5-26 Hacias discloses that the lubricant contains a boron compound, and in column 4 lines 13-17 discloses that the boron compound is preferably a boric acid or a mixture of boric acid and tetraborate, as recited in claims 26, 28, and 46. Hacias discloses that the composition is an aqueous composition, and is therefore formed by adding the boric acid to the water, meeting the limitations of claims 24-25 and 46. In

Art Unit: 1797

Table 1 (column 8 lines 30-48), Hacias discloses that the concentration of boron compound can be 2.75% by weight, within the range recited in claim 24.

11. Claim 45 is rejected under 35 U.S.C. 102(b) as being anticipated by Lum (U.S. Pat. No. 5,468,401).

In column 12 (Examples 14-1 and 14-2), Lum discloses boron-containing metalworking lubricant compositions, and in column 8 lines 29-35 discloses that the compositions can be applied by an electrostatic method, meeting the limitations of claim 45.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown.

The discussion of Brown in paragraph 8 above is incorporated here by reference. In the reference's claim 6, Brown teaches that the boron nitride has a particle size of between about 0.5 and 2 microns, or 500 and 2000 nanometers. This range overlaps the range required for the boron compound to be "nanometer-sized". See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976);"

15. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duerksen.

The discussion of Duerksen in paragraph 7 above is incorporated here by reference. Duerksen discloses the method of claim 24 where the boron compound is dissolved in a water/glycol mixture, but does not disclose where the boron is dissolved in a solvent before being added to the carrier. It is noted that glycol meets the limitations of the solvent as recited in claim 31.

Case law holds that the selection of any order of mixing ingredients is *prima facie* obvious. *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). Claims 30-31 are therefore rendered obvious, as Duerksen discloses mixing the boron compound with a solvent (glycol) and a carrier (water).

16. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duerksen in view of Erdemir (U.S. Pat. No. 6,025,306).

The discussion of Duerksen in paragraph 7 above is incorporated here by reference. Duerksen discloses a method meeting the limitations of claim 43 but does not disclose the particle size of the boric acid.

Erdemir, in column 1 lines 14-16, discloses a lubricating composition comprising boric acid. In column 3 lines 3-14, Erdemir discusses the particle size of the boric acid, and notes that the particle size can be varied based on the processing and formulation parameters. It is therefore the examiner's position that the particle size of the boric acid is a result effective variable because changing it will clearly affect the type of product obtained. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It would therefore have been obvious to use nanometer-sized boric acid particle in the method of Duerksen, meeting the limitations of claim 43.

It is also noted that Erdemir discloses in column 3 lines 3-4 that the boric acid has a particle size of 0.1 to 500 microns, or 100 to 50000 nm, overlapping the range required for the boric acid to be considered nanometer sized. See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976);"

17. Claims 32 and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hacias in view of Godek (U.S. Pat. No. 4,262,057).

The discussion of Hacias in paragraph 10 above is incorporated here by reference. Hacias discloses a method of providing a metal forming fluid meeting the limitations of claim 25 but does not further disclose the application of the fluid to the metal substrate by the methods recited in claim 32. Hacias does disclose from column 6 line 64 through column 7 line 17 drying the lubricant.

Godek, in column 1 lines 6-59, discloses an aqueous boron-containing metal forming fluid similar to that of Hacias. In the examples of columns 2-4, Godek discloses that metal substrates can be coated with the fluid by dipping or roll-coating, both as recited in claim 32. The resulting dry film lubricant will meet the limitations of claims 36-39.

It would have been obvious to one of ordinary skill in the art to coat a metal substrate with the fluid of Hacias by the dipping or roll-coating methods of Godek, as Godek teaches that those are suitable ways of coating a metal substrate with a boron-containing forming fluid.

18. Claims 32-33 and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hacias in view of Orozco (U.S. Pat. No. 3,974,674).

The discussion of Hacias in paragraph 10 above is incorporated here by reference. Hacias discloses a method of providing a metal drawing fluid meeting the limitations of claim 25 but does not further disclose the application of the fluid to the metal substrate by the methods recited in claims 32-33.

Orozco, in column 3 lines 14-18, discloses that a metal substrate can be roller-, dip-, or spray-coated with a drawing composition prior to working. The application of the drawing fluid of Hacias to a metal substrate by the methods of Orozco meets the limitations of claim 32, and the use of a spray-coating method meets the limitations of claim 33 as well. The resulting dry film meets the limitations of claims 36-39.

It would have been obvious to one of ordinary skill in the art to coat a metal substrate with the fluid of Hacias by the methods of Orozco, as Orozco teaches that those are suitable ways of coating a metal substrate with a boron-containing forming fluid.

19. Claim 30-31 and 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hacias in view of Godek as applied to claims 32 and 36-39 above, and further in view of Hall (U.S. Pat. No. 4,330,419).

The discussion of Hacias and Godek in paragraph 17 above is incorporated here by reference. Hacias and Godek disclose a method meeting the limitations of claims 24 and 32, but do not further disclose the use of methanol as a carrier.

Hall, in column 2 lines 3-33, discloses that the solubility of boric acid in an aqueous (15% hydrochloric acid) solution is greatly increased by first dissolving the boric acid in methanol. Dissolving the boric acid of Hacias in methanol before adding it to the aqueous metal drawing fluid, and then applying it to a metal substrate by the methods of Godek meets the limitations of claim 34. Additionally, the use of methanol as an extra solvent meets the limitations of claims 30-31.

It would have been obvious to one of ordinary skill in the art to include methanol as a carrier/solvent in the method of Hacias and Godek, in order to increase the amount of boric acid dissolved in the fluid composition.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Goloboy whose telephone number is (571)272-2476. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCG

/Glenn A Caldarola/
Acting SPE of Art Unit 1797

